

BMEG3210: Biofluids

Course Introduction

Prof. Jonathan Choi

The Chinese University of Hong Kong

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Instructor



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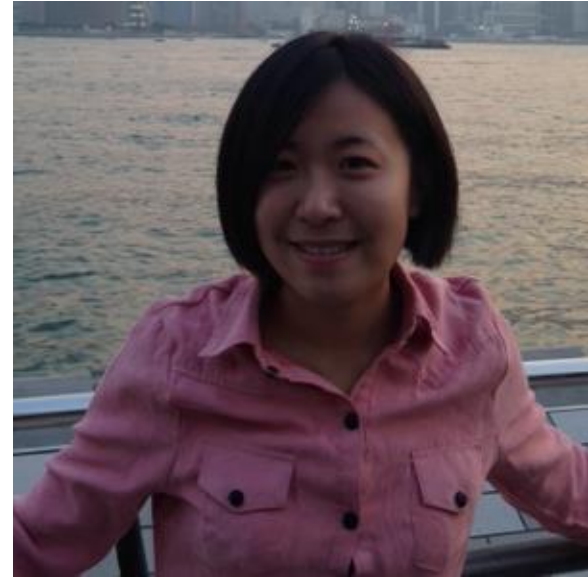
Research interests: Drug delivery, “bio-nano” interactions, nucleic acids, bionanomaterials, biological imaging

Courses: BMEG3210 (Biofluids), BMEG4450 (Bionanotechnology), BMEG4510 (Biomolecular Engineering)

Tutors



Ronald Fung (馮傲樂)
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Donna Yang (楊宏容)
donnayeung0722@gmail.com

All tutors are current PhD students in biomedical engineering at CUHK, and are available for consultation during tutorials and by email.

Timetable and venue

Meeting	Day	Time	Venue
Lectures	W	13:30 – 16:15	WMY 306
Tutorial	T	13:30 – 14:15	ERB 401

Notes:

1. Mandatory lectures are held weekly.
2. Tutorials are not regular weekly sessions, and take place only when course needs arise (e.g., discussion of assignments, review for the midterm and/or final).
3. Instructor is available to meet with students by appointment.

Assessment

Task	Due Date	Weight
Assignment 1	4/2/2015	5%
Assignment 2	25/2/2015	5%
Midterm	4/3/2015	30%
Oral presentation	25/3/2015	15%
Assignment 3	8/4/2015	5%
Final	Exam period	40%

Notes:

1. Assignments are due at the beginning of lectures. Unjustified late submissions will receive zero credit.
2. The 1.5-hour midterm will cover topics up to Week 6
3. The 3-hour final will emphasize topics covered after the midterm as well as untested topics before the midterm.

Objectives

1. Learn the concepts and mathematical tools for understanding transport phenomena.
2. Apply knowledge in transport phenomena to model and solve basic biological or applied biomedical problems.
3. Appreciate the complexity of physiology at tissue and cell levels.

Learning strategies

1. Reveal breadth rather than depth.
2. Provide mathematical tools and biology knowledge when course concepts call for them.
3. Use tutorials and assignments to reinforce concepts and mathematical tools.

Topics

Chapter	Topic
0	Introduction
1	Basic mass transfer
2	Basic fluid mechanics
-- MIDTERM --	
3	Fluid flow in the heart and blood circulation
4	Special topics*

Notes:

1. Lecture slides will be posted on the eLearning System in advance.
2. Supplementary notes will also be posted periodically.
3. Special topics may include aquatic swimming, microfluidics, and common cardiac and vascular diseases.

References

- **Transport Phenomena in Biological Systems:**
 - Truskey GA, Yuan F, Katz DF (Prentice Hall, 2004)
- **Analysis of Transport Phenomena:**
 - Deen WM (Oxford University Press, 1998)
- **Collection of published papers**

NOTE: The midterm and final will cover lecture notes. Optional reference readings serve as reinforcement to lecture presentations.

Expectations for students and teachers/ tutors

Teachers/tutors → Students

1. Provide a positive, respectful, and engaged academic environment inside and outside the classroom;
2. Organize regularly scheduled courses without undue variations, and offer adequate make-up classes to cover missed materials due to the leave of absence of the teacher and cancellation arisen from emergency situations;
3. Review assignments according to fair guidelines and in a timely fashion

Students → Teachers/tutors

1. Fully attend class activities punctually with the exception of formal pre-approved excused absence or emergency situations;
2. Avoid phone-calls or conversations unrelated to lecture topics;
3. Be prepared for class and appear with appropriate materials and completed assignments;
4. Act with integrity and honesty (<http://www.cuhk.edu.hk/policy/academichonesty>)